Herbert McKennis Jr., Ph.D.
Professor of Pharmacology
Medical College of Virginia
Health Sciences Division
Virginia Commonwealth University
Richmond, Virginia 23219

Biological Activity of Tobacco Smoke and Allied Substances.

The aim of this project is to obtain information on the role of nicotine metabolites and other substances in producing or altering biological effects ordinarily ascribed to nicotine.

An example of the experimental approach comprises the isolation and separation of the quaternary ammonium compounds produced in the metabolism of nicotine through concentration on cationic exchange resins. Crude and purified fractions are subjected to bioassay on the surgically prepared forelimb of the dog. Changes in vascular resistance are determined after administration of the metabolites.

Nicotine isomethonium ion under the experimental conditions produced an increase in peripheral vascular resistance. Termination of the physiological response appears related to a metabolism of the isomethonium ion to cotinine methonium ion, while initiation of the response may be related to an unidentified metabolite. Factors related to these and related phenomena are under study.

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